

5 **CLAIMS**

1. A method of encoding data in a code block comprising an information bit sequence in a communication device of a communication system comprising the steps of:

10 distributing the bits of the information bit sequence of a first coding branch having a length  $k$  into a first plurality of  $n$  subsets of information bits, each subset forming a code block segment having a length  $k_1 \dots k_n$  respectively;

15 supplementing at least one code block segment with information bits which have also been distributed to at least one different code block segment, such that the sum of the lengths  $k_1 \dots k_n$  of the code block segments is larger than the code block length  $k$ ; and

20 encoding the code block segments individually using at least one encoding method.

2. The method according to claim 1, further comprising the step of encoding the information bit sequence in a second coding branch individually and separate from the encoding operations of the first plurality of code block segments.

3. The method according to claim 2, wherein the step of encoding the information bit sequence is performed in a second coding branch arranged in parallel to a first coding branch, wherein the distribution and encoding operations on the first plurality of code block segments are performed independently of the encoding operations in the second coding branch.

4. The method according to one of claims 1 to 3, wherein the individual encoding steps of the code blocks and/or the code block segments are performed in a time diversity manner.

- 5 5. The method according to one of claims 1 to 4, further comprising the additional step of buffering at least a portion of either the code block or the code block segments prior to the encoding step.
- 10 6. The method according to one of claims to one of claims 1 to 5, wherein the individual encoding of the code block segments or code blocks is performed using different encoding methods.
- 15 7. The method according to one of claims 1 to 6, wherein the encoding steps use at least one of convolutional codes, trellis codes, turbo codes, Reed-Solomon codes, parity check codes.
- 20 8. The method according to one of claims 1 to 7, wherein the encoding step of the individually encoded code block segments or code blocks is performed in a plurality of parallel coding subbranches.
9. The method according to one of claims 1 to 8, wherein the information bits of the individually encoded code block segments are at least partly identical to each other to form an information overlap.
- 25 10. The method according to one of claims 1 to 9, wherein the segmentation of the code blocks is performed into code block segments of equal length.
11. The method according to one of claims 1 to 10, wherein the length of the code blocks and/or code block segments is varied by zero-stuffing or partial repetition of the information bit sequence.
- 30 12. The method according to one of claims 1 to 11, wherein the bits of the code blocks and code block segments are combined after encoding to form a code word corresponding to the original information bit sequence before encoding.
- 35 13. The method according to one of claims 1 to 12, further comprising the step of interleaving the information bits of one or more coding branches and/or subbranches.

5 14. The method according to claim 13, wherein the interleaving step uses different interleaving patterns for different coding branches or subbranches.

10 15. The method according to one of claims 13 to 14, wherein the step of interleaving the information bits is performed after separation and prior to the encoding step into code block segments.

15 16. The method according to one of claims 1 to 15, further comprising the step of adjusting the length of the code block prior to its separation into code block segments.

20 17. The method according to claim 16, wherein the adjustment is obtained by appending termination bits to the information bit sequence in at least one coding branch or subcoding branch.

25 18. The method according to one of claims 1 to 17, further comprising the step of including an error detection code inserted before the encoding step.

30 19. The method according to one of claims 1 to 18, wherein the distribution is performed by periodically switching the input bit sequence to at least one of the subbranches and repeating the application of bits of the input bit sequence to another subbranch.

35 20. The method according to one of claims 1 to 18, wherein the distribution is performed using a transition vector or matrix which signifies which input bit shall be distributed to which subbranch.

21. The method according to one of claims 1 to 18, wherein the distribution is performed using a puncturing vector or matrix that determines which bits can pass through and which bits are removed for a particular subbranch.

35 22. The method according to one of claims 1 to 21, further comprising the step of choosing which part of the information bit sequence has higher priority than other parts of said sequence and selecting this part of the information bit sequence for

5 the supplementing step, wherein the information bits are distributed to different code block segments.

23. An encoder for a communication device, adapted to carry out the method according to one of claims 1 to 22.

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24. A communication device of a wireless communication system comprising an encoder according to claim 23.